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Annual Report
of the
City Analyst
for the year
1964

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R. T. HUNTER, B.Sc., F.R.I.C.
Public Analyst and Corporation Bacteriologist

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1964-65

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CITY LABORATORIES

1964

STAFF

Public Analyst, Corporation Chemist and Bacteriologist,
Official Agricultural Analyst and Port Analyst,
Public Analyst for the County of York, East Riding,
Public Analyst for the Haltemprice Urban District Council :
R. T. HUNTER, B.Sc., F.R.I.C.

Deputy Public Analyst and Deputy Agricultural Analyst :
R. FAWCETT, F.R.I.C.

Assistant Chemists

B. M. Hill, B.Sc.

M. Bentley, A.R.I.C.

D. Dunn, A.R.I.C.

E. M. Smales

A. J. Barron, L.R.I.C.

Laboratory Assistant :

P. Ward

Clerk :

P. Webster, D.M.A. (Resigned 17/10/64)

R. H. Cooper (Commenced 8/12/64)

Laboratory Attendants :

Miss O. Wright

Miss D. Wright

THE CITY LABORATORIES,
184 HIGH STREET,
KINGSTON UPON HULL

To the Members of the City Council of Kingston upon Hull.

My Lord Mayor, Ladies and Gentlemen,

I have the honour to present my third Annual Report which deals with the work carried out in the City Laboratories during 1964.

The total number of samples examined was 9,006 as compared with 7,812 in 1963, of which 4,364 were submitted under the Food and Drugs Act as compared with 3,364. The percentage of unsatisfactory food and drug samples procured in the City (excluding poor quality milks) was 8.5 per cent.

This report has been presented in similar form for many years. It should not be assumed from this that the work done over the period has undergone no change or even little change. Many changes have occurred in the last decade. Pesticide and radioactive residues are possibilities in any food, penicillin and other antibiotic residues occur in milk, new ' wonder ' drugs appear (and perhaps vanish) almost overnight. There is an increasing chemical sophistication of foods and an almost psychic subtlety in the misdescriptions and deceit of advertisements. Unfortunately none of this seems to be accompanied by a readily demonstratable diminution in the credulity of those who read, watch and listen.

All the members of the staff, in particular the Deputy Public Analyst, Mr. R. Fawcett, have rendered able and willing service during the year and I have pleasure in acknowledging their zealous work. I would also like to thank the Members of the Cleansing and Sanitary Committee and the Health Committee for their continued interest and support.

Your obedient Servant,

R. T. HUNTER,
Public Analyst.

CLASSIFICATION OF SAMPLES

During the year the number of samples of all kinds examined was 9,006 made up as shown below.

Kingston upon Hull—			
Food and Drug Act :			
Milk	1812		
Milk (Appeal to Cows)	14		
Other Foods and Drugs	1380		
	——	3206	
Bacteriological :			
Designated Milks	260		
Ice Cream	91		
Swimming and Footbath Waters	139		
Water	1		
	——	491	
Fertilisers and Feeding Stuffs :		46	
Atmospheric Pollution :		2798	
Miscellaneous (Other Corporation Depts.) :		538	
		——	7079
Hull and Goole Port Health Authority—			
Food and Drugs Act :	210		
Ships' Drinking Waters :	57		
	—		267
East Riding of Yorkshire County Council—			
Food and Drugs Act :			811
Haltemprice Urban District Council—			
Food and Drugs Act :			137
Miscellaneous—Other Sources—			712
			——
			9006

Official Regulations, Reports, Etc.

Several Statutory Regulations which effect the work of the Public Analyst were published in the year under review. They were :—

1. The Meat Treatment Regulations, 1964.
2. The Soft Drinks Regulations, 1964. (2/6/65).
3. The Dried Milk Regulations, 1964. (11/3/65).
4. The Mineral Hydrocarbons in Food Regulations, 1964.

The dates in parenthesis indicate when the respective regulations will come into operation.

1. The Meat (Treatment) Regulations, 1964.

The need for these Regulations reflects a weakness in the Preservative Regulations.

Certain chemicals when added to meat prevent the diminution in red colour which occurs on storage or mild treatment such as freezing. Their use for this purpose, of doubtful legality in any case, has apparently been abused by certain sections of the meat trade. These regulations prohibit the addition of the chemicals to raw and unprocessed meat. Processed meat is exempt from the ban.

2. The Soft Drinks Regulations, 1964

The Soft Drinks Regulations, 1963 reviewed in my Annual Report for 1963 were revoked before they became law and replaced by the 1964 Regulations.

The 1964 Regulations contain several innovations and apart from the consequential amendment the 1963 Regulations are almost entirely re-enacted. The prohibition of *pictures* of fruit when only flavouring is present and the prohibition of *words* suggestive of any fruit not represented in the flavouring ingredients is to be extended to all soft drinks not containing fruit.

The innovations are as follows (i) saccharin may be replaced partly or entirely by another artificial sweetener named cyclamic acid. It is less sweet than saccharin but is said to have no detectable taste other than sweetness. Its safety has been extensively studied particularly in the United States of America (ii) standards of composition and labelling provisions are laid down for two new classes of soft drink to be known as LOW CALORIE and SEMI-SWEET. The descriptions are self explanatory. LOW CALORIE drinks will contain less sugar. An unlimited amount of artificial sweetener is permitted. In SEMI-SWEET drinks the usual permitted maximum artificial sweetener content is halved. The sugar content is to be less and controlled between limits (iii) Vending machines must carry a description of the soft drink offered for sale and an indication if artificial sweetener is present.

Soft drink labelling is often bad. These regulations do not seem designed to produce much improvement.

3. The Dried Milk Regulations, 1964

These regulations will only slightly amend the requirements of the Public Health (Dried Milk) Regulations 1923. A maximum water content is now prescribed for all descriptions of dried milk ; dried three-quarter cream milk may contain 3% less fat than previously ; dried milk which formerly would have been described as SKIMMED may now be described as " partly skimmed " (if it contains 1.5 to 8% fat) " low fat skimmed " or " skimmed " (less than 1.5% fat). These last two descriptions must be accompanied by a statement of per cent fat present.

4. The Mineral Hydrocarbons in Food Regulations, 1964

These regulations re-enact with amendments the Mineral Oil in Food Orders and Regulations, 1949 to 1955. They do two things (i) lay down specifications of purity for all mineral oils (or waxes) used in food (ii) increase the number of foods in which the presence of mineral oil is permitted.

The purity specification is only likely to be of value if samples of the mineral oil used are available (as distinct from the articles on or in which it is used). The analytical cost of checking the specification has been assessed at £170.

To permit mineral oil (or wax) to be used to seal eggs or to be incorporated on the rind of whole cheeses does not seem unreasonable. On the other hand it is much more difficult to see the justification for permitting its use in the " glazing " of sweets and to constitute 60% by weight of chewing gum.

Two reports were issued by the Food Standards Committee, an advisory Committee appointed by the Minister of Food, during the year under review. They discussed and made recommendations on the following topics—

1. Colouring Matters used in Food.
2. Food Labelling.

1. Colouring Matters used in Food

The colouring materials which may be added to food in this country are limited to those appearing in a list which forms the 1st Schedule to the Colouring Matter in Food Regulations, 1957. With the exception of a few foods sold in a " raw " condition viz. meat, fish, fruit, vegetables and milk, all food may contain one or more.

30 so called " coal tar " or synthetic colours appear in the above mentioned list. The report recommends that 6 be deleted. The addition of 14 others to the list was considered but in only 1 case was acceptance (provisional) recommended. Attention was drawn in reports in 1954 and 1955 to the need for more research work into the toxicology of ' coal tar ' food colours. Since that date little or none has been done. The Sub Committee of the Food Standards Committee who prepared this report recommend that the position should be reviewed within 5 years and any colour on which satisfactory evidence has not been received should be withdrawn.

The report recommends the addition of 2 synthetically produced carotenoids to the list, the limitation of titanium dioxide to surface colouring only, and that the colouring of citrus fruits, at present permitted, be prohibited.

The report further recommends that specifications of purity for all the permitted colours should be prescribed.

2. Food Labelling

The Food Standards Committee began their review of the Food Labelling Order in June 1961. They decided to publish their report in two parts. The following is a brief summary, with comments, on the first part (published September, 1964).

The Food Labelling Order 1953 requires that —— prepacked foods (with certain exceptions) when sold by retail must have a label bearing (in a clearly legible form) the following particulars

(i) The name and address of the labeller, packer or manufacturer OR alternatively a trade mark with the words " registered trade mark "

(ii) if the food consists of one ingredient—the name of the article

(iii) if the food consists of more than one ingredient—the name of the article and a list of the ingredients present.

Normally it is sufficient to list the ingredients in descending order of abundance. An alternative method permitted is to state the percentage of each ingredient present. In a few cases the latter method is compulsory.

DECLARATION OF ADDITIVES. The requirements of the Order (and the recommendations made in the Report) regarding the declaration of ingredients in general are not thought to be enough in themselves to ensure that the purchaser is given adequate and clear information about the CHEMICAL ADDITIVES, if any, present in a food. Consequently it is recommended that a special declaration be made of certain of them (viz. preservatives, antioxidants, colours, artificial sweeteners, bleachers and improvers). This recommendation applies to all food, whether wrapped or not, except raw fruit and vegetables, bread, flour confectionery (cakes), sugar confectionery (sweets) and chocolate confectionery.

A related problem is that of the sale of so called TENDERISED MEAT. Particular enzymes are being increasingly used to make meat more tender. It is recommended that such meat (sold wrapped or unwrapped) should be identified.

EXTENSION OF REQUIREMENTS. The Food Standards Committee were specifically asked to consider how far, if at all, the requirements on prepacked food should be applied to unwrapped food. They recommended that *certain* unwrapped foods should give a clearer indication of what they are. For example variety should be indicated on fish, cheese, certain fruits, potatoes ; joint or cut should be indicated on meat ; most compound foods should carry a label stating what they are. It was decided to make no recommendation regarding labelling to distinguish between fresh and quick frozen fish and also between " ordinary " meat and that produced by " intensive " methods.

Under the Food Labelling Order many prepacked foods are parially or completely exempt from the previously mentioned requirements. The Food Standards Committee recommend an extensive reduction in the number of exemptions. They also recommend that if a declaration of ingredients, although not required, is nevertheless made, it must be in the statutory form. This should eliminate the abuse of *partial declarations*, usually of course of the most desirable ingredients only.

Water added to an article need not be mentioned. No change is recommended. In my view some foods should declare the addition of water and a suitable list of these should have been recommended.

GREATER PROMINENCE OF THE REQUIRED PARTICULARS. A formula is recommended relating the size of print used (for the naming of the article and the list of the ingredients) to the size of the container. This should at least establish a minimum of clarity for the required particulars. I do not think that this in itself goes far enough to ensure satisfactory prominence of the important data on a label, in all cases. Incidentally, the Committee indicate this themselves when they specify some reinforcing provisions, for MARGARINE.

Though requiring the list of ingredients to be printed in black type on a white panel it is not considered necessary to apply the same or smilar principle to the name of the article. This is unfortunate since a judicious choice of colours for name and background can effect the prominence of words to a considerable degree.

It is recommended that so long as the above mentioned formula is complied with, important words in a description may be of differing sizes (within limits). This clarifies the position and it is hoped that it will eliminate an abuse.

COMPULSORY DECLARATION OF AMOUNT OF INGREDIENTS. In a few cases it is necessary to state the actual amount of a particular ingredient in a food viz. vitamins (if mentioned), minerals (if claimed), alcohol in some alcoholic beverages, butter in margarine (if butter mentioned), acetic acid in ‘ strong acetic acid.’ No extension on the use of this principle is recommended. The case for a method of declaring the “ strength ” of beer was considered and rejected.

MISCELLANEOUS. The body of the report is divided into 178 paragraphs. So far I have, roughly speaking, dealt with matters appearing in 92 of these. I shall not deal with 29 concerning minor and miscellaneous matters. The remaining 57 paragraphs discuss the present and proposed future labelling of a fairly wide range of foodstuffs. Changes are recommended in some cases but they do not amount to much.

In my opinion this report is bad. I think that a much more fundamental approach to the problem is required.

In June 1960, the Local Authorities Joint Advisory Committee on Food Standards was formed. Usually by means of Sub-Committees it negotiates with food manufacturers. The aim is to produce an agreement on what is regarded as good practice in connection with the composition, labelling, advertisement, etc., of the commodity under discussion. These joint discussions should be a valuable supplement to the work carried out by the Food Standards Committee. During the year under review progress seems to have been very slow and no new agreements have been published.

Composition of Foods

Milks

(*a*) 1,556 samples were received for chemical analysis, their average composition being as follows :—

	Kingston upon Hull		
	No.	Fat %	Non-fat Solids %
1964	1265	3.73	8.69
1963	1211	3.78	8.68
1962	1477	3.75	8.73
1961	1303	3.72	8.72
1951-60		3.70	8.74

	East Riding C.C.			Haltemprice U.D.C.		
	No.	Fat %	Non-fat Solids %	No.	Fat %	Non-fat Solids %
1964	277	3.89	8.76	14	3.64	8.94
1963	242	3.82	8.79			
1962	214	3.89	8.80			

(*b*) MILK—CHANNEL ISLANDS

For milk sold as Channel Islands, Jersey, Guernsey or South Devon there is an absolute standard of 4% by weight minimum milk-fat content as distinct from the presumptive 3% standard which applies to other types of milk. Also the vendor can make an extra charge for it.

127 samples were received for chemical analysis, their average composition being as follows :—

	Kingston upon Hull		
	No.	Fat %	Non-fat Solids %
1964	55	4.68	9.10
1963	45	4.73	9.03
1962	64	4.75	9.06

	East Riding C.C.			Haltemprice U.D.C.		
	No.	Fat %	Non-fat Solids %	No.	Fat %	Non-fat Solids %
1964	68	4.69	8.98	4	4.46	9.34
1963	43	4.66	9.08			
1962	34	4.80	9.16			

2 samples were found to contain extraneous water (see later).

4 samples were found to contain less than 4% of fat.

They contained respectively 3.9% (KH 717), 3.7% (ER 114E), 3.6% (ER 97A) and 3.5% (ER 54B) of milk fat. In the last mentioned case, representing a 12.5% deficiency, the vendor was prosecuted, convicted and fined £5.

If sold at 10½d. per pint, Channel Island milk of the average quality shown above (KH only) costs 1d. for 7.7 grammes of MILK SOLIDS.

(c) OTHER MILKS

1,429 samples were received for chemical analysis, their average composition being as follows :—

	Kingston upon Hull		
	No.	Fat %	Non-fat Solids %
1964	1210	3.69	8.67
1963	1166	3.75	8.67
1962	1413	3.70	8.72

		East Riding C.C.			Haltemprice U.D.C.	
	No.	Fat %	Non-fat Solids %	No.	Fat %	Non-fat Solids %
1964	209	3.63	8.68	10	8.78	3.32
1963	199	3.64	8.73			
1962	180	3.67	8.73			

If sold at 9d. per pint, milk of the average quality shown above (KH only) costs 1d. for 8.1 grammes of MILK SOLIDS.

In this country there is no definite standard of composition for liquid milk (other than that mentioned above under Milk—Channel Islands). In general, so long as it can be shown that it is as the cow produced it no offence is committed. A Government Committee in 1900 did not decide on definite standards but advised that milk containing less than 3% milk-fat and/or 8.5% non-fat milk solids should be suspect. This idea is retained in the most recent Sale of Milk Regulations (1939).

SUSPECT SAMPLES—KINGSTON UPON HULL

The details are as follows :—

	Total		Deficient in Fat		Deficient in N.F.S.		Deficient in Both	
	No.	%	No.	%	No.	%	No.	%
1964	328	27.1	89	7.4	273	22.6	34	2.8
1963	300	25.7	59	5.1	263	22.6	22	1.9
1962	331	23.4	88	6.2	275	19.5	32	2.3

(*i*) Samples deficient in both MILK-FAT and NON-FAT MILK SOLIDS.

34 such samples were examined, 7 contained extraneous water.

(*ii*) Samples deficient in MILK-FAT.

Of the 89 samples examined, 17 had a deficiency of less than 5%, 71 less than 15%, 2 had deficiencies of 40%. " Appeal to Cows " sample No. 2 (see Appendix II) *i.e.* a sample taken at a " corresponding " milking supervised by Corporation officials, contained less than 3% milk-fat.

(*iii*) Samples deficient in NON-FAT MILK SOLIDS

A non-fat milk solids content of less than 8.5% raises the presumption that a milk contains extraneous water. The Hortvet Freezing-Point Test, developed in this country in the early 1930's is a very sensitive test indeed for the detection and determination of extraneous water and has since its inception been applied in this Department to milks containing less than 8.5% non-fat milk solids.

Of the 273 samples found to be deficient 174 had a deficiency of less than 2.5%, 231 less than 5%. 35 samples were found to contain extraneous water.

SUSPECT SAMPLES—EAST RIDING C.C.

The details are as follows :—

	Total		Deficient in Fat		Deficient in N.F.S,		Deficient in Both	
	No.	%	No.	%	No.	%	No.	%
1964	34	16.3	3	1.4	32	15.3	1	0.5
1963	19	9.5	8	4.0	13	6.5	2	1.0
1962	12	6.6	4	2.2	8	4.4	Nil	—

The 3 MILK-FAT deficiencies were respectively of 17%, 13% and 5%.

Of the 32 samples deficient in NON-FAT MILK SOLIDS, 29 had a deficiency of less than 2.5%, 31 less than 5%. 1 sample was found to contain extraneous water.

(*d*) SAMPLES CONTAINING EXTRANEOUS WATER

KINGSTON UPON HULL

37 such samples were examined during the year. 12 of these were received by way of normal routine sampling. The extraneous water present varied from 0.2 to 11.8%. On investigation of these, 25 further samples were discovered restricted to the supply of 2 vendors. They were prosecuted, convicted and fined £20 and £40 respectively, in the latter case with 10 guineas costs.

EAST RIDING C.C.

3 such samples were examined during the year. 2 were of Channel Islands milk. The amounts of extraneous water present were respectively 2%, 2.8% and 12%. In the last mentioned instance the vendor was prosecuted, convicted and fined £1.

It has been my experience that milk sampled as it comes from the farm may quite often have a Non-solids fat content of greater than 8.5% and yet contain extraneous water. This year has been exceptional in that only 2 such samples have been discovered. 27 " Appeal to Cows " samples (see Appendix II) were taken in connection with samples suspected of containing extraneous water. All gave a Freezing-Point (Hortvet) of more than 0.530°C., the lowest being 0.536 C.

At the moment efforts are being made to raise the quality of milk. A scheme to pay producers on a quality basis has recently become operative. A Government Committee in 1960 reported in favour of fixed minimum standards for milk-fat (3% within five years) and non-fat milk solids (8.5% within ten years) for milk sold by retail. The expected decrease in the large number of poor quality (suspect) milks revealed by sampling ex-farm churns (the method by which Kingston upon Hull obtain most of their samples) has not yet materialised.

Meat and Fish Products

461 of the samples examined are classifed under the above heading. Appendix III gives a list indicating the wide range of products tested.

The samples were submitted by, as follows :—

Kingston upon Hull	287	(73)
East Riding County Council	112	(13)
Haltemprice Urban District Council	22	(6)
Hull and Goole Port Health Authority	21	(1)
Private Purchasers	19	(—)

The figures in parenthesis represent the number of samples which were reported as unsatisfactory on the grounds of low meat (or fish) content.

At present there are no legal standards for meat content in any meat product other than meat paste or spread. In the case of fish products, there are legal standards for fish content in fish pastes and in fish cakes.

A sample of Crab Paste (KH476) was found to contain only 53 per cent of fish instead of the required, not less than 70 per cent. 1 sample of Fish Cakes (KH985) was found to contain only 30 per cent of fish instead of the required, not less than 35 per cent.

Several of the traditional articles on sale in butcher's shops have been found to be of unsatisfactory composition.

In assessing the meat content an average purchaser might expect in a particular article two sources of information are very useful. The first is a Food Standards Committee recommendation (where made) (has a national basis), the second is the average obtained by examining products made and sold locally in recent years (has a local basis). This data is incorporated in the following table which also gives the number of unsatisfactory samples examined during the year.

	Standard Required	Samples analysed (recently) Number	Average Meat Content	Unsatisfactory samples (1964)
Aislet	(65)	18	68	2
Black Pudding	65	9	76	1
Brawn	80	19	79	5
Hamburgers etc.	80	56	78	19
Meat Pie	25	131	30	3
Meat and Vegetable Pie	12½	7	14	1
Meat Roll	65/50			1
Polony	65	91	55	5
Potted Meat, no cereal	95	60	88	5
cereal present, no cereal		17	—	2
Sausages, Beef	50	166	60	1
Pork	65	445	65	5
Luncheon	65			1
Sausage Rolls	(20)	45	23	0
Saveloy	(65)	48	61	7

Where the standard is in parenthesis the Food Standards Committee have made no recommendation.

SAUSAGES

Of the 11 samples of Pork Sausages taken in the City during the year 2 (KH44 and KH621) were found to contain only 59 per cent of meat. A further sample described as Luncheon Sausage (KH137) was found to contain only 45 per cent of meat instead of the expected 65 per cent.

In 1964 the East Riding County Council submitted 35 samples of Pork Sausages and 24 samples of Beef Sausages for examination. 4 samples were found to be unsatisfactory containing respectively 58 per cent (Pork ER133B), 58 per cent (Pork ER122A), 50 per cent (Pork ER421) and 45 per cent (Beef ER 420B) of meat. The last 2 samples were from the same butcher who was prosecuted, convicted and fined £3 for each offence.

HAMBURGERS ETC.

The sale of flat discs (or rectangles) of meat, most commonly known as beefburgers or hamburgers, has increased markedly in recent years. In 1964, 55 such articles (excluding 2 canned) were submitted for examination. 15 different descriptions were used. In view of the similarity in appearance and name it was decided to require the same minimum amount of meat in them all.

In all 19 hamburgers etc., were reported as unsatisfactory. 12 contained 70 per cent or more meat, 1, 65 per cent and the other 6 approximately 30 per cent.

In two instances it was decided that the vendor should be prosecuted. In the first, KH119 Burger (containing 31 per cent of meat) the case was dismissed. In a nutshell, the prosecution contended that the word Burger whether qualified or NOT implied at least 80 per cent of meat. The defendant stated that he had received official complaints when he had been selling an article described as a Beefburger containing only 50 per cent of meat. To avoid these he had decided to remove the " beef " entirely from the description and lower it in the article (to 30 per cent). In the second, KH121 Beefburger (28 per cent of meat) the vendor was convicted and fined £10.

POTTED MEAT

The Food Standards Committee in their Report on Food Labelling 1964 recommend that this article should contain not less than 95 per cent of meat and also that no cereal should be present. On this basis, of the 13 samples examined during the year 5—(KH292 71%, KH293 92% KH295 93%, KH321 89% and ER173C 81%) were deficient in meat, while 2 (HU44 and HU46) were adulterated with cereal.

MEAT PIES

Of the 16 samples submitted during the year 13 were found to contain appreciable amounts of cereal in the filling.

Prepacked meat products, usually canned or frozen, have been the cause of considerable concern in recent years mainly due to the frequency with which their descriptions do not indicate the true nature of the contents of their tin or carton. Often considerable quantities of water and/or cereal are incorporated with no or inadequate declaration. The Food Standards Committee in their Report on Canned Meat Products, 1962, recommended the qualifying of the named meat with certain appropriate words as being an adequate declaration. The lists of appropriate words includes the following with the amounts of added water and/or cereal they could mean in practice in parenthesis : " with jelly " (18%) ; " with gravy " (20%) ; " with sauce " (30%); " luncheon " (20%) ; " Loaf " (35%). The following is a list of the canned meat products reported as unsatisfactory, their respective meat contents are also given. The genuine article should contain the amount given in parenthesis—

KH82	Bacon Fry	90%	(95%)
KH1069	Beef, braised	65%	(95%)
KH434	Beef in gravy	71%	(75%)
KH84	Casserole beef in gravy	56%	(75%)
KH1074	Beef with gravy	68%	(75%)
KH1072	Roast beef dinner	17%	(35%)
KH542	Beef stew and vegetables	33%	(35%)
KH83	Canned chicken	54%	(95%)
KH222	Canned chicken	48%	(95%)
KH433	Canned chicken	90%	(95%)
HU115	Chicken fillets	84%	(95%)
KH323	Chicken in Jelly	68%	(80%)
KH543	Chicken Casserole	39%	(95%)
ER252A	Chicken Casserole	40%	(95%)
ER398	Chopped Ham and Pork	84%	(95%)
ER95E	Chopped Ham and Pork	89%	(95%)
KH413	Beans with Baconburgers	66%(H)	(80%)
KH81	Beef Hamburgers in gravy	51%(H)	(80%)
HG	Braised Kidneys in gravy	72%	(75%)
KH950	Luncheon Meat	66%	(80%)
ER400	Pork Luncheon Meat	77%	(80%)
KH949	Liver Loaf	58%	(65%)
KH536	Irish Stew	33%	(35%)

KH539	Irish Stew	31%	(35%)
KH1070	Shepherd's Pie	17%	(35%)
ER506	Stewed Steak	90%	(95%)
HU66	Steak Casserole	64%	(95%)
HU69	Steak Casserole	72%	(95%)
HU70	Stewed Steak with gravy	52%	(75%)
ER54A	Stewed Steak in gravy	72%	(75%)
ER73A	Casserole Steak in gravy	67%	(75%)
KH324	Turkey in Jelly	69%	(80%)
KH325	Turkey in Jelly	76%	(80%)

5 samples of Luncheon Meat (Private) and 1 of Corned beef (HU62) were considered inedible. Numberous black patches were present on the meat ("sulphide blackening ") and the interiors of the metal containers bore marked signs of corrosion.

Other Foods

During the year 4 of the samples submitted—Private Shredded Coconut, Private Sugar, Private Canned Milk Pudding and KH304 Canned Milk Pudding—were considered to be inedible on account of their unsatisfactory taste and smell. Storage for too long a time and/or under unsatisfactory conditions is the usual cause of this complaint.

The coconut was rancid, the sugar tasted strongly of paraffin whilst the canned milk puddings had a sharp " metallic " taste.

35 samples of BREAD were examined. The plain white (10) and brown (13) breads were found to be of satisfactory composition. However, 5 Milk Breads, 1 Milk Cob and 1 Butter Loaf were found to be unsatisfactory. The Bread and Flour Regulations, 1963 require that types of bread described as ' Milk ' e.g., Milk Loaf shall contain not less than 6 per cent of whole milk solids (calculated by weight on dry matter). Similarly, types of bread described as ' Butter ' shall contain 6 per cent of milk fat. The following percentages of whole milk solids were found in the Milk Breads—KH924 2.4, KH925 3.9, KH926 4.2, KH927 1.8, KH928 2.5, KH930 Milk Cob 0.6 while the Butter Loaf KH929 contained only 2.1 per cent of milk fat.

14 samples of plain white FLOUR were examined. The Bread and Flour Regulations 1963, as well as specifying the minimum amount of chalk that must be added to plain white flour, also, perhaps wisely, specify the maximum. Sample KH128 was found to contain 60 milligrammes (per 100 grammes of flour) more than it should.

15 pre-cooked CANNED MILK PUDDINGS were submitted for examination. Rice was the starch ingredient in 10, Macaroni in 2, and Semolina in 1. Many recipes for home prepared Milk Puddings include the addition of a lump of butter. It might appear that the word CREAMED is used to indicate that such addition had been made in the samples under discussion. In 4 this, in effect, appears to be so. It is thought that the word MILK in the description should indicate that preparation has been by a process involving the use of milk, of average quality, throughout. 7 per cent of water had been introduced in the production of one sample—KH497 Rice Milk Pudding—and it was reported as unsatisfactory.

As with canned fruits, your Analyst is prepared, for the time being, to accept as standards for CANNED VEGETABLES what the canners themselves describe as good commercial practice. 46 samples were examined during the year. 8 were reported as unsatisfactory. Further details are as follows :—

		% Vegetable present	% Standard
KH417	Broad Beans	60	63
KH502	Carrots	60	63
KH503	Carrots	58	63
KH504	Carrots	61	63
KH505	Carrots	57	63
KH425	Garden Peas	58	63
KH465	Mixed Vegetables	59	63
KH466	Mixed Vegetables	60	63

It will be noted that the standard used for the above permits up to approximately one third of the contents of the can to consist of added water.

An article described as MILK CHOCOLATE with nuts—KH396—was reported as unsatisfactory because the milk present was skimmed milk. It may be noted in passing that there is a continuous pressure on the part of some manufacturers to describe skimmed milk in compound articles as ' milk,' ordinary milk i.e., milk with its usual amount of associated fat being given a superior title such as ' full cream milk.'

The Food Standards (Preserves) Order, 1953, requires that JAM, in addition to containing a certain amount of the named fruit (or fruits) must contain a minimum amount of sugar too. This amount is regarded as the minimum necessary to avoid rapid deterioration of the product under normal conditions of storage and use. Of the 26 samples received 1—HU29—was slightly deficient in sugar as indicated by the determination of ' Soluble Solids.'

Similarly (though it is not controlled by regulation) it is considered that CUT MIXED PEEL should contain a minimum amount of sugar (64 per cent). 1 sample—ER192E—contained only 60 per cent and was reported as unsatisfactory.

When MARZIPAN, of the type sold on or for putting on cakes, re-appeared in the shops in the early 1950's there was evidence that some manufacturers were prepared to market a product of pre-war quality (40% almonds, 60% sugar), other manufacturers however diluted their product until as little as 15 per cent of almonds were present. During the last few years samples examined have usually contained more than 25 per cent. (Average of 106 samples examined since 1957—27 per cent). The 7 samples examined during 1964 all contained 25 per cent or more. 3 samples described as CAKE TOP were submitted for examination. Qualitatively they had the same composition as marzipan. They contained respectively 18, 23 and 27 per cent of ground almonds.

The Food Standards (ICE CREAM) Regulation, 1959, include the following requirements—(i) that an article described as Ice Cream shall contain at least 5 per cent of fat and 7.5 per cent of non-fat milk solids ; (ii) the same standards shall apply to an article described as DAIRY Ice Cream except that the fat must be all butter fat, and (iii) the use of artificial sweetening materials such as saccharin is prohibited. The Food Labelling Order requires prepacked ice cream to bear a statement to the effect that it contains fat not derived from milk and also suggestions of connections with a dairy, by word of pictorial device, are forbidden.

Details of the 106 samples examined are as follows :—

KINGSTON UPON HULL		Fat %			Non-Fat Milk Solids %		
	No.	Av.	Max.	Min.	Av.	Max.	Min.
Dairy Ice Cream	11	11.1	13.5	8.5	11.1	13.2	8.9
Ice Cream	80	8.5	13.3	5.5	11.8	16.4	8.1
	91	8.8	13.5	5.5	11.7	16.4	8.1

EAST RIDING COUNTY COUNCIL

	No.	Fat % Av.	Fat % Max.	Fat % Min.	Non-Fat Milk Solids % Av.	Non-Fat Milk Solids % Max.	Non-Fat Milk Solids % Min.
Dairy Ice Cream	1	9.3	9.3	9.3	12.0	12.0	12.0
Ice Cream	14	8.9	11.1	5.8	11.5	13.4	9.6
	15	8.9	11.1	5.8	11.6	13.4	9.6

No sample was found to contain artificial sweetening material. It will be noted that all samples were of satisfactory chemical composition.

The Food Standards (Butter and Margarine) Regulations, 1955 permit up to 16 per cent of water to be present in BUTTER. This is a generous amount and analytical figures indicate that manufacturers take full advantage of it. 1 sample—KH92— containing 16.2 per cent was reported as unsatisfactory.

14 samples of DRIPPING were examined. 3—KH169, KH171, KH172—containing respectively 8, 22 and 19 per cent of water were reported as unsatisfactory. This is an old problem in this area. There is a demand for the water containing article and it is usually sold as " dripping with gravy."

Though the legal minimum is 65 nearly all spirits sold today contain 70 per cent proof spirit and such is usually indicated on the bottle. During 1964, 14 samples were received for examination. With one exception all were of satisfactory strength. WHISKY—ER605E —with only 66 per cent proof spirit present contained 5 per cent of excess water.

SOUP POWDER—KH604—was found to contain only 1,200 I.U. of Vitamin A per ounce whereas 2,000 I.U. were claimed on the label.

Food Labelling

Introduction—Section 6 of the Food and Drugs Act, 1955, makes it an offence to give a label with or publish an advertisement for, a food which falsely describes it or is likely to mislead a purchaser as to what he would be buying.

Section 7 of the Act gives very wide powers for the making of Regulations for controlling the labelling and advertising of foods. These are exercised to quite a marked degree in the Food Labelling Order. Earlier in this Report will be found a brief outline of Part I of a two part survey of this Order by the Food Standards Committee.

In the year, 12 articles were considered unsatisfactorily labelled ; 8 submitted by Kingston upon Hull, 3 by the East Riding County Council and 1 by the Haltemprice Urban District Council.

Descriptions—Most foods when packed ready for sale must carry a label giving the usual or common name of the article. The use of the ' usual or common name ' causes confusion when it does not correspond with the true description. More and more one seems to find that this name serves only to identify the article and gives little or no indication of contents. The description of articles which bear a similarity to those which have (or had) a common or usual name raises many problems. The manufacturers usually wish to stress the similarity as much as possible and the Food and Drug Authorities to prevent this being done beyond the point at which it would mislead an average purchaser. Part IV of the Food Labelling Order deals with certain foods (ICE-CREAM, PEAS, COFFEE, BUTTER, MARGARINE, STRONG NON-BREWED CONDIMENT). In recent years new or revised Food Standard Regulations have usually incorporated labelling provisions relating to the commodities being controlled.

Modern methods of advertising and distribution can rapidly build up a demand for an article that is clearly misdescribed. Qualities of excellence, occasionally very different from those that the name suggests it should have, become identified with a product. In recent years this process seems to have occurred prominently with Canned Meat Products. It represents a very serious challenge to those who wish merely to prevent the growth of misdescription. It is my main objection to the Food Standards Committee Food Labelling survey that this problem does not appear to have been satisfactorily dealt with.

Some descriptions though satisfying the law in their content seem to offend in their presentation. Differences in the size of the various words and clever use of differently coloured letters and backgrounds can, on occasions, deceive even a highly trained observer. I do not think that the recommendations on this point made in the survey go far enough.

Details of the articles unsatisfactorily described are as follows :—

KH479 Milk—Though this sample was clearly labelled PASTEURISED the contents had not been so treated. The vendor apparently had no wish to sell the milk as pasteurised milk he merely was trying to ‘ use up ’ his stock of bottles.

KH998 Canned Grapes—The can contained grapes and syrup. Exception was taken to the omission of any reference to the presence of syrup.

ER129E and HU47 Frozen Soft Drinks or Ice Lollies—These two articles were in transparent packs with an identifying name on an attached card. To comply with the Food Labelling Order the common or usual name and the name and address of the packer should have been given.

ER189E Tea—The label of this sample did not include the common or usual name of the article, as required by the Food Labelling Order.

Declaration of Ingredients—To comply with the Food Labelling Order, many foods consisting of more than one ingredient, when packed ready for sale, must include on their label a statement as to which ingredients (with the exception of added water) are present and what are their relative amounts. Quite often manufacturers of articles not required by law to disclose ingredients choose to do so. In general, if this is done in the form normally adopted then, in assessing whether or not the disclosure is satisfactory, the same principles are applied as would be applied if the disclosure were compulsory. The Food Labelling Order review supports this procedure.

Details of the articles with unsatisfactory disclosed ingredients are as follows—

KH1285 and KH1290 Christmas Puddings—No disclosure of ingredients was given.

ER191E Canned Oranges in syrup—No disclosure of ingredients was given.

KH1163 and KH1163 Food Colouring Solutions—These samples were prepared other than by solution of a permitted colouring matter in water only. No disclosure of ingredients was given.

KH522 Chocolate Cake Mix—A partial declaration of ingredients was given, and only on an interior packet.

KH1282 Honey's Lemon Spread—No disclosure of ingredients is required on this article. However a list was given which implied that all the fat present was milk fat. In fact, approximately 80 per cent of the fat consisted of margarine.

Food Additives

Several regulations of a general character are concerned with the addition of chemicals of no intrinsic nutritional value, to foods.

These include the following :—

Artificial Sweeteners Order	1953
Colouring Matter Regulations	1957
Antioxidant Regulations	1958
Preservative Regulations	1962
Emulsifiers and Stabilisers Regulations	1962
Mineral Hydrocarbons Regulations	1964

Also several regulations prohibit or permit the addition of chemicals to the particular food to which they refer. For example, the Bread and Flour Regulations, 1963, permit the addition of certain of the so-called Bleaching and Improving Agents to Flour.

A considerable amount of time is spent at the City Laboratories seeking contraventions of the above Regulations.

Details of certain of the examinations are as follows :—

Regulation	Number examined	Number containing	Contraventions
Preservative . .	702	95	1
Colouring Matter .	607	338	0
Antioxidant . .	117	9	0

The numbers given do not include milk samples.

It will be noted that during the year no sample was found to contravene the Colouring Matter Regulations, 1957, or the Antioxidant Regulations, 1958.

1 sample, an Orange Drink (ER74A), contravened the Preservative Regulations. Both of the permitted preservatives sulphur dioxide and benzoic acid were present. An excess of approximately 28 per cent of total preservative was present.

Tetracyclines are antibiotics frequently used in medicine. In recent years trials have been carried out to ascertain their value as food preservatives. The Preservative Regulations, 1962, permit up to 5 parts per million to be present in raw fish.

It appears that fish landed at Hull may contain Chlortetracycline and fish landed at Grimsby Oxytetracycline. During the last six months of the year 16 samples (8 from each port) were submitted for examination. 2 were found to contain chlortetracycline and 1 oxytetracycline, but in each case the amount was not in excess of 5 parts per million.

Foods Containing Extraneous Matter

From time to time all manner of peculiar objects are found, on visual examination, in foods.

Details of such samples (21) received during the year are as follows :—

Corned Beef, Stewed Steak, a Cake, Potato Crisps, Sweets, Canned Cream—contained dirt.

Luncheon Meat—contained vegetable fibre and dirt.

Bacon—a mould growth was present.

HU82 Dried Apricots—a mould growth and evidence of mites were present.

KH630 Dried Apricots—insect larvae were present.

KH625 Dates—insect larvae and maggots were present.

KH631 Figs—insect larvae and maggots were present.

Bread—contained a rodent dropping.

A Cake—contained strands of tobacco.

KH488 Chopped Pork—contained a large fly.

Ground Almonds—contained tartaric acid and salt.

Apples—had black skins.

HG Onions (2)—one sample had received surface contamination with Acetic Acid or a similar compound, another with Albigen A (a dye stripper).

Cheese and Tomato Spread—black particles of dried tomato were present.

HU64 Soft Drink—was fermenting.

Most of the above samples were received from, or as a result of complaints by, private purchasers.

In their production many foods are liable to contamination of another, more dangerous, type. They may pick up traces of chemicals some of which are highly toxic, and which are not visible to the eye. Regulations of a general character concerned with this type of extraneous matter are the :—

Arsenic in Food Regulations, 1959

Lead in Food Regulations, 1961

In addition the Food Standards Committee has considered and recommended limits for the amounts of Copper and Zinc that may be present in Foods. The Fluorine in Food Regulations, 1959, are concerned with the contamination of acidic phosphates, and hence the foods which often contain them such as Baking Powder and Self Raising Flour, by Fluorine.

A considerable amount of time is spent at the City Laboratories seeking contraventions of the above regulations (or recommendations).

Details are as follows :—

Regulation or recommendation	Number examined	Number containing	Contraventions
Arsenic . .	245	47	0
Lead . . .	539	270	3
Copper . .	64	63	3
Zinc . . .	9	9	0
Other Metals etc. .	42	27	0

A sample of Luncheon Meat was found to contain 6.6 parts per million, 1 sample of canned Sardines in tomato sauce (KH1181) 12 parts per million and a Food Colouring solution (KH1160) 50 parts per million, in each case of lead. The Lead in Food Regulations, 1961, require that the above 3 articles shall not contain more than 5, 5, and 20 parts per million respectively.

KH1225 Candied Peel contained 30 parts per million, KH1124 and ER198E Cut Mixed Peel 35 and 31 parts per million respectively, in each case of copper.

20 parts per million is the generally accepted unofficial limit. The most likely source of the copper is one of the sprays used on the fruit, from which the peel is derived, at the growing stage. However, one manufacturer at least thinks it may be derived from tinned copper tubing used in his processing plant and is having this replaced by stainless steel.

In mid 1963 the Milk Hygiene Sub-Committee (a sub-committee of a Committee set up by the Minister of Food to advise on technical problems in the dairy industry) published their report on " Antibiotics in Milk in Great Britain." In England and Wales during 1961 41,700 samples of ex-farm milks were examined. 11 per cent were shown to contain antibiotics. The survey also revealed that penicillin was the most common antibiotic present and that seasonal and regional variation existed.

In September 1963 the testing of samples was begun at the City Laboratories. In the last 4 months of that year 165 samples of milk were examined for the presence of penicillin. 26 i.e. 15.7 per cent were found to contain it.

Details for 1964 are as follows :—

Number examined	Antibiotics present in	Antibiotics per cent	Penicillin more than 0.05 I.U. per ml.	Penicillin less than 0.05 I.U. per ml.	Other Antibiotics
686	104	15.2	16	87	1

Since 1945 but more particularly in the last 10 years there has been a marked increase in the types of spray used to control agricultural pests. Several of the chemicals used are highly toxic to human beings. There is the danger that dangerous amounts of these may find their into foods. At the present time the Association of Public Analysts has a working party which is trying to develop a sorting test. Results indicate that there is no serious risk at the moment. With the exception of the samples examined for traces of metals (which may be derived from sprays) no samples were examined in this connection at the City Laboratories during the year. Necessary apparatus has been bought and it is hoped that this important work will begin in 1965.

AFLATOXIN. In Britain in 1960 outbreaks of an apparently new disease occurred in young turkeys causing over 100,000 deaths in a few months. The common factor in all the outbreaks was found to be groundnut meal. Investigation showed that a strain of the common mould Aspergillus flavus was the responsible agent. It produces a toxic factor (named AFLATOXIN) when grown on sterile non toxic groundnuts. Comparative feeding trials have shown variations in susceptibility to the effect of AFLATOXIN in different species of animals. Ducklings are particularly sensitive, chickens comparatively resistant. Lambs are much less susceptible than calves or pigs. It must be emphasised that there is no scientific evidence that humans have suffered ill effects from the consumption of groundnuts contaminated with AFLATOXIN. However the problem is being extensively studied nationally.

5 samples of groundnuts in shell were taken by the Port Health Authority. 3 were found to be contaminated. It appears that the consignment had been intended for animal feeding purposes. 12 samples of nuts on retail sale were taken and all found to be uncontaminated.

Drugs

132 samples were submitted for examination during the year, 104 by Kingston upon Hull, 18 by the East Riding County Council and 10 by Haltemprice Urban District Council. 12 were found to have compositional defects and 3 were unsatisfactorily labelled.

Details are as follows :—

KH1058 Camphorated Oil—contained 22.1 per cent w/w of camphor, instead of between 19 and 21 per cent, as required by the British Pharmacopeia 1963.

KH813 Sodamint Tablets—contained 335 milligrammes of total carbonate, calculated as Sodium Bicarbonate instead of between 275 and 325 milligrammes.

KH240 Aspirin Tablets—contained 4.45 instead of not less than 4.75 grains of acetylsalicylic acid.

KH254 Compound Codeine Tablets—contained 284 milligrammes of Phenacetin and 6.5 milligrammes of Codeine Phosphate instead of between 237.5 and 262.5 milligrammes and between 7.4 and 8.6 milligrammes respectively.

KH392 and KH393—Parrish's Chemical Food—contained 0.35 and 0.20 per cent w/v of iron respectively, instead of between 0.40 and 0.45 per cent, as required by the British Pharmaceutical Codex, 1963.

KH882 and KH884—Sulphur Tablets—contained 0.29 and 0.28 grammes of Sulphur respectively instead of between 0.30 and 0.34 grammes, as required by the British Pharmaceutical Codex, 1954.

KH1323 Magnesia Tablets—The list of ' active ingredients ' given with this article claimed the presence of 24 per cent of Magnesium, calculated as Mg, whereas only 18 per cent was found to be present.

KH883 Sulphur Tablets—The list of ' active ingredients ' given with this article claimed the presence of 25 per cent of sulphur, whereas only 21 per cent was present.

ER126E Compound Aspirin Tablets—contained an excessive amount of salicylic acid and had a strong smell of acetic acid. In effect, they had decomposed to a marked degree.

ER907 Vitamin Capsules—were purchased on 27/11/64. A retaining band bore the statement ' use before 30/9/59.' Not with surprise, it was found that though each capsule was claimed to contain 6,000 I.U. of Vitamin A only 250 I.U. were present.

KH 821 Friar's Balsam and KH 869 Bismuth Lozenges—were labelled ' B.P.' There are no monographs on these articles in the current edition of the British Pharmacopeia.

KH674 Decolourised Tincture of Iodine—was labelled ' B.P.C.' There is no monograph on this article in the current edition of the British Pharmaceutical Index.

In December a Circular was issued by the Ministry of Health pointing out that Sampling Officers had the power to sample drugs not on sale to the general public and usually received by them by way of doctor's prescriptions. This power has existed for a long time but it was represented to the Minister that some pharmacists were reluctant to supply these drugs. No such drugs were received for examination at the City Laboratory during 1964. Another body (not the Local Authority) checks prescriptions.

In recent years several leading members of the Pharmaceutical Profession have severely criticised the method of Drug Testing used by most Local Authorities. They have suggested that it be abandoned and be taken over by their Profession. The Pharmaceutical Industry through the British Pharmacopeia and the Codex fix their own standards. When approximately 11 per cent of the preparations examined do not comply with these the situation can not be regarded as satisfactory. New legislation to strengthen the power of the Local Authorities would seem to me a much better solution.

Bacteriological Examinations

A total of 491 samples were submitted by the Medical Officer of Health (Kingston upon Hull) for bacteriological examination. They consisted of the following : Designated Milks, 260 ; Ice Creams, 91 ; Swimming Bath Waters, 79 ; Footbath Waters, 60 ; and 1 water from a caravan site. 49 received adverse comment.

In addition, the Chief Food Inspector submitted 4 samples and the Hull and Goole Port Health Authority 120 samples of liquid egg for examination. 5 were reported as unsatisfactory.

Designated Milks—The Milk (Special Designation) Regulations, 1963 came fully into force on the 1st of October, 1964. They re-enact with amendments the Milk (Special Designation) Regulations, 1960. The special designation for raw milk becomes ' Untreated ' instead of ' Tuberculin Tested.' The reason for this change is very welcome.

'Tuberculin Tested' is considered to be no longer suitable as a description for some milk only, since all milk produced in England and Wales now comes, and will continue to come, from attested herds. Other amendments are slight and do not affect this department.

According to the Milk (Special Designation) Regulations, 1960/63, milk sold as T.T./Untreated or Pasteurised must comply with a test which is some indication of keeping-quality (Methylene Blue Test), also Pasteurised (Phosphatase Test) and Sterilised (Turbidity Test) milks must comply with tests that indicate they have been efficiently heat treated.

During the year the following number of milk samples were examined to check the designation used—T.T. 81, Untreated 23, Pasteurised 120, Sterilised 36. With the exception of 1 Pasteurised milk which failed the phosphatase test all passed the appropriate test (or tests).

Ice Cream—Using the Methylene Blue Test 91 samples were examined and graded as follows : Grade I, 80 ; Grade II, 4 ; Grade III, 4 ; Grade IV, 3. The samples in Grades III and IV, 7 (7.7%) were considered to be unsatisfactory. In previous years 26% (1961), 23% (1962), 9.6% (1963) were similarly considered so. There is thus a continued improvement. There was evidence in each case that low grading was associated with the presence of thermoduric organisms.

Swimming Bath Waters—79 samples from 14 swimming baths were examined for the presence of presumptive coliform organisms. In 4 samples they were shown to be present.

Footbath Waters—60 samples from 11 footbaths, adjacent to the swimming baths, were also examined for the presence of coliform organisms. In 36 samples they were shown to be present.

Fertilisers and Feeding-Stuffs

38 animal feeding-stuffs were submitted by Kingston upon Hull during the year, of which 5 were unsatisfactory, in as much as their statutory statement of composition did not agree, within the official limits of variation, with the analytical findings.

Details are as follows :—

No. 6	Meat and Bone Meal	Protein	38.5%	(40.0%)
No. 9	Expeller Linseed Flakes	Oil	9.0%	(7.5%)
No. 10	Rabbit pellets VA	Oil	4.4%	(3.25%)
No. 29	Rearing pencils	Oil	5.1%	(4.0%)
No. 34	HY "18" Meal	Protein	21.4%	(18.0%)

The figures given are those obtained on analysis. The figures in parenthesis are the amounts of the respective ingredients that were claimed to be present.

4 samples submitted privately were also examined. 1 of these was a Poultry Meal. An analysis was requested to try and determine if the Meal was the cause of poor egg laying by the hens being given it. Another of these samples turned blue on the addition of water. The person submitting the sample expressed astonishment and a little fear of the consequences this might have on the health of the cattle for whom it was intended.

4 fertilisers were submitted privately for examination and found to be satisfactory.

Atmospheric Pollution

The department maintained its interest in atmospheric pollution throughout the year. We collaborated as fully as before in daily measurements of smoke and sulphur dioxide made at 5 specially selected sites within the City. In addition, we gave a small amount of assistance to the Ministry of Technology in its investigation on the drift of pollution from cities and also measured smoke readings taken at Market Weighton.

The average daily amounts of smoke and sulphur dioxide, calculated on a 3 monthly basis and expressed as microgrammes per cubic metre, found in the atmosphere outside the City Laboratories since 1958, are as follows :—

	Jan-March		April-June		July-Sept.		Oct.-Dec.	
	Smoke	SO2	Smoke	SO2	Smoke	SO2	Smoke	SO2
1958	370	180	230	120	180	90	500	250
1959	360	230	120	110	100	100	240	170
1960	270	190	100	110	90	100	270	190
1961	230	200	80	100	90	80	270	200
1962	250	190	90	110	60	60	240	220
1963	210	210	80	90	80	70	160	140
1964	170	170	70	90	60	100	200	210

The corresponding figures on an annual basis are :—

	1954-8	1959	1960-62	1963	1964
Smoke	320	200	170	130	120
Sulphur dioxide	140	150	150	130	120

The City now has 9 areas under smoke control (it being understood that certain of these adjoin one another) 3 have been controlled since 1/6/59, 5 since 1/10/61 and 1 since 1/10/62. This would account for the dramatic and continued fall in the SMOKE figures since 1958. It will be noted that the SULPHUR DIOXIDE figures show little change.

The daily averages, calculated on an annual basis, recorded at the above mentioned 5 stations are as follows :—

Type of Area	Site	Smoke	SO_2
Residential (Smoke Controlled)	Greenwich Avenue	50 (40)	90 (80)
Industrial	Clough Road	120 (100)	180 (160)
Residential (low population density)	Ellerburn Avenue	140 (130)	110 (110)
Commercial	High Street	120 (130)	120 (130)
Residential (high population density)	Gordon Street	200 (200)	150 (150)

The figures in parenthesis are those obtained in 1963.

Miscellaneous samples for other Corporation Departments

538 samples were submitted compared with 649 in 1963.

Water Engineer—306 samples of water drawn at these laboratories were examined for residual chlorine only. The average amount found was 0.17 parts per million. The figures varied between 0.10 and 0.34 parts per million.

Medical Officer—184 samples were submitted consisting of Swimming Bath Waters 79, Footbath Waters 60, Paddling Pond Waters 19 for residual chlorine determination : Germicidal detergent (1) and glass (1) for identification : Sludges (18) and Atmospheric Dusts (2) for determination of composition : Underfloor waters (2) to assist in the discovery of their source : and Drain waters (2) to assess their likely effect on fish.

City Engineer—submitted 12 samples consisting of Waters (2), Soils (2), and ' Filling Materials ' (2) (intended for a drain) for determination of pH and sulphate content : Trade Effluents (6) for determination of pH and suspended solids content.

Planning Officer—submitted 24 samples consisting of Soils (11) for determination of composition and Grass and Vegetable leaves (13) for determination of acidity.

Supplies Officer—submitted 2 samples of Metal Polish for a comparison to be made of their compositions.

City Coroner—submitted 7 specimens consisting of Liver (for Aspirin and barbiturate content determination) 1 ; Blood (for aspirin and barbiturate content determination) 1 (for alcohol content determination) 1 ; Urine (for aspirin and barbiturate content determination) 1, for (barbiturate content estimation) 2 ; Stomach and contents (for barbiturate content estimation) 1.

Civic Catering Manager—submitted a " foreign body " for identification. It proved to be cooked starch mixed with dirt.

Parks Superintendent—submitted a sample of soil to see if we could find a reason for grass failing to grow on it.

Telephone Manager—submitted a sample of " Black Sand " for a report on its possible use as a packing material.

Miscellaneous—Other Sources

769 samples were submitted compared with 409 in 1963.

The ' other sources ' mentioned in the title consist of neighbouring authorities, private firms and individuals.

Atmospheric Pollution—326 estimations were made, confined to the last 3 months of the year.

Milks—236 samples were submitted privately, 232 to check designation, 2 for the determination of chemical composition and 2 to check how efficiently reconstitution of skimmed dried milk had been achieved. The answer was badly. In one case approximately 30 per cent too little water had been used, in the other 40 per cent too much.

Other Foods and Drugs—25 samples were submitted consisting of Tablets (16), to check composition ; Fish (8) examined for tetracyclines and Bread (1). This contained " Black Specks " caused by the presence of dirty lubricating oil.

Water—141 samples were submitted. Examination was required to determine chemical purity, 57 (H and G) ; residual chlorine content, 43 ; suitability for drinking, 15 ; bacteriological purity, 2 ; hardness, 12 ; sources, 4 ; contaminants, 5 ; pH and sulphate content, 1 ; suitability for discharge into stream (sewage effluents), 2.

Toxicological—Human—8 specimens were submitted for examination. Urine (2) and stomach contents—for aspirin and phenacetin determination ; Urine for alcohol determination ; stomach contents for barbiturate determination ; blood and stomach contents for aspirin and barbiturate determination ; gastric washings for aspirin determination.

Animal—7 specimens were submitted for examination. yellow solid (1) indentified as DNOC ; parts of a pig (3) believed killed by eating the yellow solid ; parts of 2 dogs for general search for poisons ; dog vomit (1)—for search for stimulant drugs.

Miscellaneous—26 samples comprising Hair (1)—found in food and appeared to be of bovine origin ; Sand (1)—found to be free from sewage contamination ; Bactericidal Detergents (3)—in each case the makers claim to a satisfactory dilution appeared wildly exaggerated ; Deposit from a water system (1)—proved to be mainly rust; a Cattle " Salt Lick " (1)—was found to contain 0.51 per cent of Copper Carbonate ; Deposit from a refrigerator (1)—consisted mainly of dirt but yeasts and mould were also present ; Milk bottles (12)—appeared to have been satisfactorily washed ; Tallow (3) ; Ashes (1)—contained 0.23 per cent of sulphate ; " Hemp " (1)—this material, found in the possession of a sailor was shown to contain hemp ; Soap (1)—complied in every respect with the relevant British Standard Specification.

APPENDIX I

Summary of Samples Received

Milks	2,767
Other Drinks, Foods and Drugs	2,209
Air Pollution	3,126
Water Samples	757
Miscellaneous Samples	147
	9,006

APPENDIX II

Table of Milk (Appeal to Cows) Samples

Kingston upon Hull

Date	Sample No.	Milk-Fat Per Cent	Non-fat Solids Per Cent	Freezing-point Depression (Hortvet)
19/8/64	1	4.25	8.25	0.541 °C
	2	2.95	8.25	0.540 °C
9/12/64	3	3.95	8.65	0.545 °C
	4	3.95	8.65	0.542 °C
	5	3.45	8.65	0.540 °C
	6	3.50	8.60	0.541 °C
	7	4.30	8.50	0.545 °C
	8	4.50	8.45	0.543 °C
	9	3.20	8.65	0.537 °C
	10	3.00	8.50	0.536 °C
	11	3.60	8.50	0.540 °C
	12	3.25	8.60	0.536 °C
	13	3.00	8.50	0.536 °C
	14	3.00	8.55	0.536 °C

Table of Milk (Appeal to Cows) Samples

East Riding County Council

Date	Sample No.	Milk-Fat Per Cent	Non-fat Solids Per Cent	Freezing-point Depression (Hortvet)
25/4/64	14B	4.45	9.30	0.544 °C
	15B	4.70	9.50	0.544 °C
	16B	4.40	9.30	0.541 °C
	17B	4.70	9.45	0.542 °C
	18B	4.95	9.25	0.541 °C
	19B	5.60	9.25	0.542 °C
	20B	5.50	9.50	0.545 °C
	21B	5.20	9.40	0.542 °C
	22B	5.70	9.00	0.540 °C
	23B	5.60	9.20	0.542 °C
4/7/64	58B	2.45	8.54	0.540 °C
	59B	2.70	8.20	0.541 °C
	60B	2.50	8.40	0.540 °C

APPENDIX III

Table of Samples examined under the Food and Drugs Act.

	Kingston upon Hull	East Riding C.C.	Hull and Goole P.H.A.	Haltemprice U.D.C.	Private	Unsatisfactory
Foods :						
Aislet	10	—	—	—	—	2a
Almonds	8	1	—	—	1	1d.
Angelica	2	—	—	—	—	—
Apples	—	—	1	—	1	1d.
Arrowroot	—	1	—	—	—	—
Baby Cereals	3	—	—	—	—	—
Baby Puddings	—	1	—	3	—	—
Bacon	1	—	2	—	1	1a, 1d.
Baking Powder	8	—	—	—	—	—
Barley Kernels	1	1	—	—	—	—
†Beef Products	8	—	—	—	—	6a
Beer, inc. Ale and Stout	14	2	2	—	—	—
Biscuits	12	5	—	—	—	—
Black Puddings	1	—	—	—	—	1a
Brawn	9	—	—	—	—	5a
Breads, Various	27	7	—	—	1	7a, 1d.
Breakfast Cereals	—	2	—	—	1	—
Butter	25	11	2	—	1	1a.
Cakes	—	7	—	—	4	2d.
Cake Decorations	13	—	—	—	—	—
Cereal Beverage Powder	—	1	—	—	—	—
Cheese and Products	21	5	2	—	1	1d.
Cherries, Glace	8	2	—	—	—	—
Chewing Gum	9	1	—	—	—	—
Chicken, Canned	3	—	—	1	—	4a.
Chicken Products	5	7	2	2	—	3a.
Chitterlings	2	—	—	—	—	—
Chocolate	1	3	3	—	—	1a.
Chocolate Spread	—	—	—	1	—	—
Chocolate Substitute	—	1	—	—	—	—
Chocolates	8	—	—	—	—	—
Christmas Puddings	8	5	—	—	—	2b.
Christmas Tree Decorations	5	—	—	—	—	—
Cocoa	—	—	—	3	—	—
Coconut, Desiccated	8	—	—	—	1	1a.
Coffee	—	1	—	—	—	—
Coffee, Soluble Solids	—	6	—	4	1	—
Coffee and Chicory Essence	3	—	—	4	—	—
Cooking Fats and Oils	8	2	1	—	—	—
Carried Forward :	231	72	15	18	13	41

	Kingston upon Hull	East Riding C.C.	Hull and Goole P.H.A.	Haltemprice U.D.C.	Private	Unsatisfactory
Brought Forward :	231	72	15	18	13	41
Cordials	—	5	—	—	—	—
*Corned Beef and Products	—	4	—	1	3	1a, 1d.
Cowheel	1	—	—	—	—	—
Cream	12	7	1	1	1	1d.
Crispbread	2	2	—	—	—	—
Crushes	2	1	—	—	—	—
Drinking Chocolate	—	3	—	2	—	—
Drinks, Frozen	1	2	—	2	—	2b.
*Drinks, Whole Citrus	5	5	—	—	—	1c.
Dripping	16	1	—	—	—	3a.
Eggs, Liquid	4	—	120	—	—	5
Fish Cakes	6	5	—	—	—	1a.
Fish Cutlets	1	—	—	—	—	—
Fish Paste or Spread	11	1	—	—	—	1a.
Fish Patties	—	—	—	—	1	—
Fish Savoury	1	—	—	—	—	—
Fish Steak	1	—	—	—	—	—
Fish Various	48	2	2	—	2	1d.
Flour	7	7	—	—	—	1a.
Flour Mixtures	7	4	—	—	—	1b.
Flour, Self Raising	9	1	—	—	—	—
Food Colours	9	1	—	2	—	2b, 1d.
Food Flavourings	9	1	—	4	—	—
Fruit, Canned	9	4	1	—	—	2b.
Fruit Curds	9	3	—	—	—	1b.
Fruit, Dried	38	2	1	1	—	4d.
Fruit Juices	1	5	4	—	—	—
Fruit Pie Fillings	—	3	—	4	—	—
Fruit Pies	20	2	—	—	—	—
Fruit Pulp	—	—	1	—	—	—
Gelatine	—	1	—	—	—	—
Grapefruit	—	—	1	—	—	—
Gravy Mix	5	—	—	1	—	—
Gravy Salt,	2	1	—	3	—	—
†Ham Products	—	4	1	—	—	2a.
Hamburgers	55	2	—	—	—	21a.
Herbs, Dried	3	—	—	—	—	—
Honey	6	1	—	5	—	—
Honey Spread	1	—	—	1	—	—
Horseradish Creamed	—	1	—	—	—	—
Ice Cream	81	13	—	—	—	—
Ice Cream, Dairy	10	1	—	—	—	—
Ice Cream Cake	—	1	—	—	—	—
Carried Forward :	623	168	147	45	20	93

	Kingston upon Hull	East Riding C.C.	Hull and Goole P.H.A.	Haltem-price U.D.C.	Private	Unsatis-factory
Brought Forward :	623	168	147	45	20	93
Ice Lollies	—	1	—	—	—	—
Jam	9	10	1	6	—	1a.
Jellies, Table . . .	12	2	—	5	—	—
†Kidney Products . .	1	—	1	—	—	1a.
Lard	18	—	1	—	—	—
Lemons	—	—	4	—	—	—
Liqueurs	1	—	—	—	—	—
*Luncheon Meat . . .	2	7	1	—	11	7a, 2d.
Macaroni etc. . . .	3	—	—	1	—	—
Margarine	8	4	—	6	—	—
Marmalade	—	1	—	5	—	—
Marzipan inc. Almond Paste .	5	2	—	—	—	—
Marzipan Substitute . .	3	—	—	—	—	—
Meat Extracts . . .	—	1	—	—	—	—
*Meat Loaf	2	1	—	—	—	1a.
*Meat Pastes and Spreads .	14	3	6	—	—	—
Meat Patties . . .	2	—	—	—	—	—
*Meat Pies	16	—	—	—	—	3a.
Meat and Vegetables Pies .	2	—	—	—	—	1a.
Meat Products, Miscellaneous	7	—	1	—	—	—
*Meat Puddings . . .	1	—	—	—	—	—
*Meat Roll inc. Stuffed . .	3	1	—	—	—	1a.
Meat with Sauce . . .	—	—	1	—	—	—
Meat and Vegetables . .	5	—	—	—	—	3a.
Milk	1224	223	—	10	2	127
Milk, Channel Islands . .	55	67	—	4	—	6
Milk, Canned . . .	9	2	4	—	—	—
Milk, Dried	6	—	3	—	1	—
Milk Puddings . . .	11	3	—	—	1	3a.
Mince	1	—	—	—	—	—
Mincemeat	9	7	—	—	—	—
†Minerals	5	8	—	—	—	—
Molasses	2	—	—	—	—	—
Mustard Powder . . .	2	—	—	—	—	—
Mustard Prepared . .	6	—	—	—	—	—
Oatmeal, Oats . . .	5	—	—	—	—	—
Olive Oil	6	—	—	—	—	—
Onions	—	—	2	—	—	2d.
Oranges	—	—	8	—	—	—
Peanut Spread . . .	6	—	—	2	—	—
Peanuts	12	—	5	—	—	3d.
Pease Pudding . . .	1	—	—	—	—	—
Peel, Candied . . .	10	—	—	—	—	1d.
Carried Forward	2107	511	185	84	35	255

	Kingston upon Hull	East Riding C.C.	Hull and Goole P.H.A.	Haltemprice U.D.C.	Private	Unsatisfactory
Brought Forward :	2107	511	185	84	35	255
Peel, Cut Mixed	8	3	—	—	—	1a, 2d.
Piccalilli	1	1	—	—	—	—
Pickle, Sweet or Chutney	3	4	—	1	—	—
Pickles, Various	5	—	1	1	1	—
Pig's Tails	2	—	—	—	—	—
Polony, Various	6	—	—	—	—	5a.
†Pork Products	3	—	1	—	—	1d.
Potato Crisps	8	2	—	—	1	1d.
Potted Fish	1	—	—	—	—	—
*Potted Meat	6	1	—	6	—	7a.
Puddings, Miscellaneous	—	1	—	—	—	—
Rennet, Essence of	4	—	—	—	—	—
Rice and Products	17	—	—	3	—	—
Rolls	1	1	—	—	—	—
Rusks	1	—	—	—	—	—
Saccharin Tablets	8	—	—	—	—	—
Sago and Products	4	—	—	—	—	—
Salt	8	—	—	—	—	—
Sauces	7	4	1	5	—	—
Sauce Mixes	18	—	—	—	—	—
Sausages	13	59	2	6	—	7a.
Sausage Improver	2	—	—	—	—	—
Sausage Meat	—	4	—	—	—	—
Sausage Rolls	9	4	—	—	—	—
Saveloys	9	—	—	—	—	7a.
Savoury Ducks	2	—	—	—	—	—
Semolina	1	—	—	1	—	—
Sheeps Reeds	1	—	—	—	—	—
Soft Drink Powders	9	2	—	1	—	—
Soft Drink Tablets	—	1	—	—	—	—
Soups, Canned	11	2	—	3	—	—
Soup Powders	12	—	—	—	—	1a.
Spaghetti etc.	3	—	—	—	—	—
Spices	14	—	—	—	—	—
Spirits	5	8	—	—	1	1a.
Squashes	7	2	—	—	—	—
Starches Prepared	14	2	—	1	1	—
*†Steak Products	—	4	—	6	1	6a, 1d.
Suet	4	—	—	—	—	—
Sugars, Various	19	—	—	—	1	1a.
Sweets	48	12	2	—	1	1d.
Sweetening Tablets	4	1	—	—	—	—
Syrups	—	—	3	—	—	—
Carried Forward :	2405	629	196	118	42	297

	Kingston upon Hull	East Riding C.C.	Hull and Goole P.H.A.	Haltemprice U.D.C.	Private	Unsatisfactory
Brought Forward:	2405	629	196	118	42	297
Syrup, Golden	1	—	—	—	—	—
Tapioca	7	—	—	1	—	—
Tea	9	5	—	—	—	1b.
Tomatoes, Canned	9	2	12	—	—	—
*Tongue	—	1	1	—	—	—
Treacle	2	—	—	—	—	—
Trifle Mix	1	1	—	—	—	—
Tripe and Products	7	—	—	—	—	—
Trotters	3	—	—	—	—	—
Turkey, Canned in Jelly	2	—	—	—	—	2a.
Udders	2	—	—	—	—	—
Vegetables, Canned	41	3	2	—	—	8a.
Vegetables, Dried	9	2	—	—	—	—
Vegetables, Mixed	1	—	—	—	—	—
Vegetable Pie	1	—	—	—	—	—
Vermicelli	1	—	—	—	—	—
Vinegars	8	12	—	—	—	—
Wines	6	3	—	—	—	—
Yeast	—	1	—	—	—	—
Yeast Extract	—	—	—	1	—	—
Drugs:						
Liquids	21	8	—	3	—	5
Miscellaneous	6	—	—	—	—	—
Ointments/Creams	12	—	—	—	—	—
Powders	10	1	—	4	—	—
Tablets	55	9	—	3	—	9a, 1b.
Totals:	2619	677	210	130	42	323

NOTE :—† some of the products that could be classified under this heading are classified under products marked *

Unsatisfactory Samples

a. Details under Composition of Foods.

b. Details under Food Labelling.

c. Details under Food Additives.

d. Details under Samples containing Extraneous Matter.

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